AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions. Please amend the claims as follows.

1. (Previously presented) A photonic circuit comprising:

a photonic resonator;

means for heating said photonic resonator;

means for measuring a temperature of said photonic resonator via a Kelvin probe connection to an imbedded resistor located in close proximity to said photonic resonator;

means for coupling said temperature measuring means to said heating means; and

logic means in the form of readout circuitry for associating one or more frequencies of light to one or more temperatures of said photonic resonator;

wherein said temperature measuring means monitors said temperature of said photonic resonator and transmits signals to said heating means based on said temperature and said logic means; and further

wherein said heating means is enabled or disabled through a feedback loop so that said photonic resonator is maintained at a precise temperature and selectively filters a frequency of light corresponding to said temperature;

thereby said photonic circuit functions as a variable tunable switch capable of selecting a particular frequency of light in a deliberate stepped manner.

2. (Previously presented) The photonic circuit according to claim 1, wherein said photonic resonator, said heating means, said temperature measuring means, and said coupling means are etched onto an integrated circuit chip.

3. (Previously presented) The photonic circuit according to claim 1, wherein said temperature of said photonic resonator is varied over a range of temperatures, thereby causing said photonic resonator to selectively add and drop frequencies corresponding to said temperatures, and wherein said photonic circuit further comprises means to process said selected frequencies.

4. (Original) The photonic circuit according to claim 1, wherein said circuit is used as an accurate control for photonic switching.

5. (Previously presented) The photonic circuit according to claim 1, wherein said imbedded resistor comprises an aluminum wire.

6. (Original) The photonic circuit according to claim 1, wherein said coupling means comprise a processor.

7. (Previously presented) A process to variably tune a frequency selected by a photonic resonator comprising the steps of:

identifying a frequency stored in a logic device to be selected by said photonic resonator, said logic device comprising a readout circuit;

identifying a temperature stored in said logic device, said temperature associated with said frequency stored in said logic device;

sensing a temperature of said photonic resonator via a Kelvin probe connection to an imbedded resistor located in close proximity to said photonic resonator;

transmitting a measure of said temperature to said logic device;

determining whether said temperature of said photonic resonator equals said temperature identified in said logic device; and

adjusting said temperature of said photonic resonator through a continuous feedback loop to equal said temperature identified in said logic device

thereby selecting the color of light for transmission through said photonic resonator.

8. (Previously presented) The process to variably tune a frequency selected by a photonic resonator according to claim 7, wherein said temperature is sensed by a change in resistance of an imbedded resistor wherein the resistor is a metal wire.

9. (Original) The process to variably tune a frequency selected by a photonic resonator according to claim 8, wherein said metal wire comprises aluminum.

10. (Previously presented) The process to variably tune a frequency selected by a photonic resonator according to claim 9, further comprising the steps of:

measuring a resistance of said wire at room temperature;

increasing resonator temperature by forcing a current though said wire;

determining the temperature of said photonic resonator during operation by measuring the resistance of the wire at this temperature.

11. (Original) The process to variably tune a frequency selected by a photonic resonator according to claim 8, further comprising the steps of:

transmitting a current through said wire;

connecting a volt meter to said wire;

measuring a voltage across said wire; and

calculating the resistance of said wire.

12. (Previously presented) The process to variably tune a frequency selected by a photonic circuit according to claim 11, wherein said volt meter is connected to said wire via a Kelvin connection said wire being substantially formed of aluminum material.

13. (Original) The process to variably tune a frequency selected by a photonic resonator according to claim 7, wherein said measure of temperature is used as a key into a lookup table, said lookup table comprising different frequencies selected by said resonator at different temperatures.

14. – 23. (Canceled)

24. (Previously presented) The photonic circuit of claim 1, wherein said logic means comprises a memory and processor.

25. (Previously presented) The photonic circuit of claim 7, wherein said logic device comprises a memory and a processor.